

LENTECULAR POLYESTER RESIN SCULPTURE: TRANSPARENCY AND LIGHT

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What I am going to show you is basically a kind of historical event, not that it is terribly important, but it does illustrate a progressive discovery of a transparent medium, or a movement from a relatively conventional sculptural attitude toward something relatively new, the concept of light as a sculptural medium.

The series I was involved in, in the mid 60's, led me into an investigation of a variety of media. Prior to that I had been working almost exclusively in wood construction and welded metal from which grew concepts involving the use of other kinds of material necessary to get my ideas out. I titled this series "Anatomes" since their forms are expressive of abstract anatomical structures that relate to nothing in a specific biological sense, but rather a more universal kind of biological reality.

In the time before I was invited to work at the California Institute of Technology where there was a proper laboratory to work in, I equipped a part of the studio with a rudimentary exhaust system; you could not really call it a climate-control system, but it was fairly well insulated, reasonably clean, and away from the other processes of the studio, which created a controlled situation for casting polyester resin. The molds I used were usually of fiberglass made from plaster forms, and in some cases, glass-lined plywood molds from which I cast prismatic shapes.

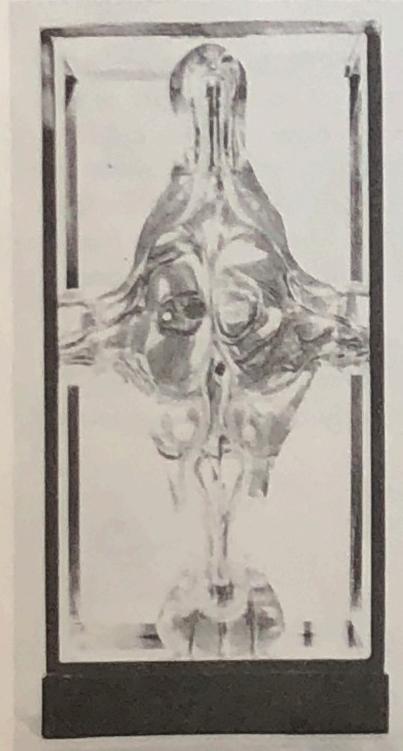
At the California Institute of Technology, I was given a unique laboratory to work in, which no longer exists. It was an old biological testing facility that was half greenhouse, (Fig 1) which was not particularly a fantastic place

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in which to work with resin, but it was designed with a complete climate-control system so that the plants could be subjected to a range from arctic or subtropical climatic simulations. It had an astounding basement, filled with all sorts of incredible electronic and plumbing devices that accomplished this. The system came up through the floor and return ducts on the side which provided a complete circulatory system. We could maintain a very constant environment, which is really all that is needed. It maintained 70-75° temperature and a relative humidity less than 50%, so we knew that if anything did go wrong, it was most likely not a matter of the environment that our materials were being worked in. At this point I was mixing catalyst and resin in a 55 gallon drum with drill motors rigged with flexible shafts and paint mixers, and using a homemade filter made from a plastic bucket with a very fine stainless steel mesh taped to the bottom. This filtered out all the extraneous matter that accompanied it into the drum, or anything that might be gathered in the process of dispensing or mixing it, a requirement in order to end up with an optically clean product.

After a successful casting I would take the basic block back to my own studio which happened to be 30 miles away and grind them down manually to the lens-like shapes that I was concerned with.

Here is a finished piece and the second half of that same piece which I am working on. You can begin to see in the ovoid section, a hint of some of the prismatic color that is the result of the manipulation of the shapes demonstrating the way they accumulate and refract light.

Now, we will go back a bit to where I was before this all started, about 1964-65, ten years ago. I was involved in a series of pieces that, as I mentioned, I called "Anatomies". They were abstractions, biomorphic forms that came from the subconscious, that generally required a kind of reference of framework within which to exist, (Fig. 2). At the time I was interested in possibly pursuing these forms as inflatables so they could exist on a primary basis of growth within the framework. I never got the technology of inflatables to any point where I could actually use it to create forms of that nature and control them.

The first transparent piece of that series, (Fig. 3), which is quite small, was

cast in about 1965 when casting resins were virtually unheard of. There was a casting resin available, but it was not made for castings of over two inches thick; the initial idea was a result of working with larger pieces with heavy steel armatures. I enjoyed the linearity of the skeletal structure of the armature so much I wanted to retain them, so I started experimenting with transparent material. The first attempts were nearly complete disasters because they cracked severely and frequently. Sometimes however, I ground and resanded in my effort to save the pieces which were, at that time modulated sufficiently so that the various fractures are not terribly apparent. Later, within the same conceptual realm of the "Anatomes", I began to modify my forms according to what I thought the resin might accommodate when I discovered its weaknesses. At the same time, I began vacuum-metalizing some pieces on the back so that they would mirror light back out through the piece.

The larger pieces I think were about 1967 or 68 which were made up of panels, (Fig.4). There was no way at that time to cast large, heavy thick quantities without disaster, so I worked with panels which I assembled into complete structures. As I progress I become more involved with light, less involved with the external aspects of the forms, and the frame becomes more a residual part of the statement although it is still prominently apparent, (Fig.5).

This close up of five pieces which were among my first realization in the kind of intense prismatic color that can happen in the forms. I started to simplify my forms out of the "Anatome" idea in an attempt to take advantage of the prismatic refraction that occurred within the transparent mass.

At this time I am also experimenting with different mixtures of resin, so I am using silicone rubber molds. For anything large, it is astronomically expensive to use, but it is fantastic material because it needs no releasing compounds of any sort on the mold. The silicone rubber (Dow Corning's "Silastic") is completely self-releasing on resins. The last I bought, which was a few years ago, was \$45.00 a gallon. But, when you are getting about an 80% failure ratio and you want to get something substantial from your efforts, you could just keep casting into these molds time and time again.

A kind of experimental piece that also expressed my desire to show a kind of progressive organic growth also served as an experiment with the resin, to learn how to maintain quality-control color and transparency throughout, from a small mass to a large mass, (Fig.6).

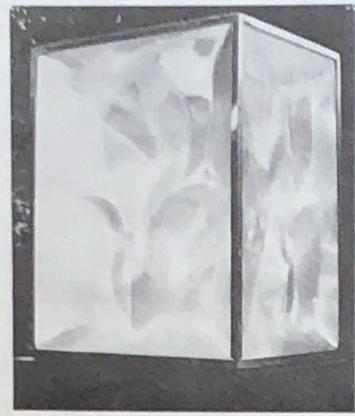
The idea of the sequential piece was actually to have Box 1 and Box 10 be virtually identical in appearance. But the material generally came with so much humidity in the drums that it would be trapped in the materials once it got beyond a certain point, so I could not get anything really transparent out of it. The first successful larger castings were a foot or more thick and about three feet high. In many instances, I had to cast the piece six or eight times before I got one to come out satisfactorily.

AUDIENCE: What was the problem you were encountering?

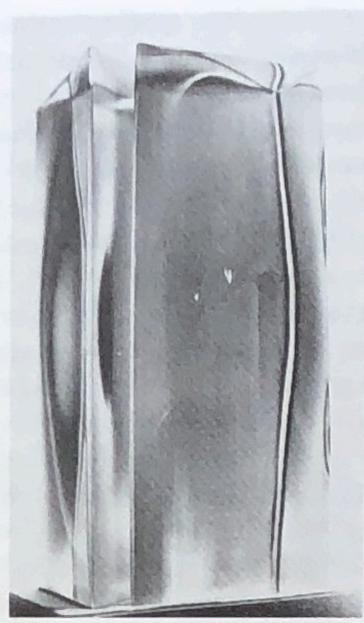
BASSLER: Cracking, primarily.

AUDIENCE: And that was due to what?

BASSLER: It might have been because of over-catalyzation, due to the fact there was no flexible additive in the particular resin. It just simply was not capable unless you under-catalyzed it so severely that you came up with a non-transparent



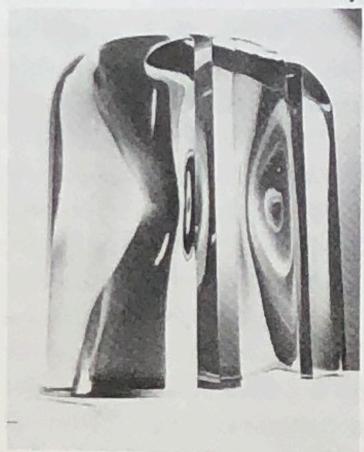
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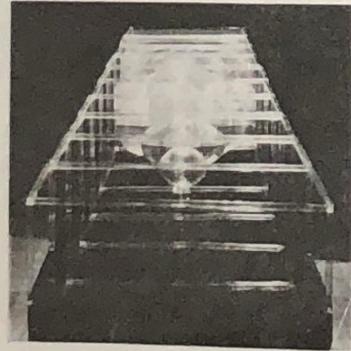
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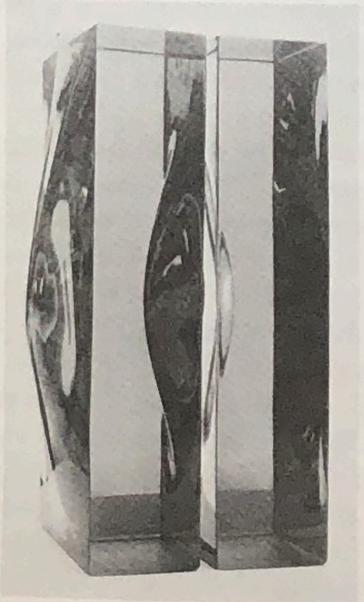
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volume. Around 1969, I began to be able to control it a little better. I rather like the particular translucent quality, but it is really moisture contamination in the resin. And, if we look at the next piece which was cast when PPG first came out with their first mass-cast resin, a little better quality of transparency is apparent. PPG has pretty much THE product to work with, although a number of other chemical companies a few years ago were competing fairly successfully. I finally ended up with my own mixture, which no longer exists because the companies involved either collapsed because of the oil crisis, or they are no longer making the mass-casting resin in the same formulas they were before.

Once I gained that advantage over the material, I really began to go to it with the idea of controlling very delicately the external and internal volumes in order to manipulate light. In this case the form is a double prism with very, very slight bulges on the outside which modify the straight linearity of the projected prism, (Fig.7).

The color is all prismatic color; there is no color at all in the piece itself. It is also only from a very, very specific angle that you get the intense colors. Generally, one perceives the piece simply as a clear block of plastic, (Fig.8), (Fig.9).

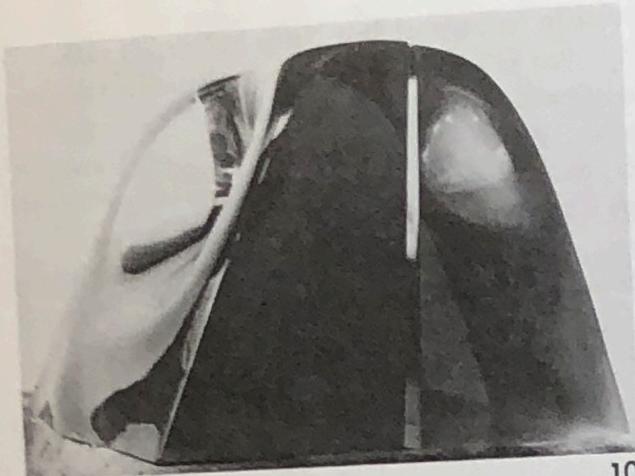
I also discovered something after photographing these pieces for some time. I was frustrated because I could not obtain photographically the proper color. I did not have a color/temperature meter, but I discovered that there is a filter factor to the transparent volumes. I had assumed that working in daylight with daylight film the results would be something that was pretty close to their color. But, because the light is being filtered through the plastic, which is 12 to 24 inches thick, you get completely different colors. The environment might look right, but the piece would be totally different. So I started using filters with the film constant, and was far more successful.

This is a four-piece prismatic, primarily, then carved on the inside and the outside. I attempted to use this piece for a variety of other kinds of optical experiments, because it is a pretty good sized prism, about three and one half feet high. And it is capable of doing some pretty spectacular projections.

This is that two-foot thick piece (Fig.10) we saw earlier being poured. Also that pinkish module which you saw in my studio was the original shape for this piece. Here it is in Paris at the Musée d'Art Moderne outside in the rain. The piece attracted a lot of attention since Europeans have not seen much in the way of solid transparent sculptures. Some people had worked in carved acrylics but hardly anybody has ever been able to get a product that was castable. So we were considerably ahead of them in that respect.

AUDIENCE: How does the material weather outdoors?

BASSLER: I have never really had a piece outdoors for a long period of time. They resist rain fine, but I think at the biggest danger is the ultraviolet rays from the sun, which will eventually cloud and discolor the resin. It is relatively soft; I mean it scratches easily, with people going up and touching it and so on, so you would need a kind of maintenance crew to polish it occasionally. Bruce Beasley has a very large acrylic piece in Sacramento that is apparently taking an awful lot of abuse, beginning to craze and crack and so forth. But it is the first of that sort of thing. I would go once a week to polish it during the exhibition; just taking polish and buffing it out. People have to touch it; they touch it with



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can use them for intermediate polishing procedures. A variety of things will work, even toothpaste.

Here are some of the larger lenticular columns in the Galerie La Demeure, looking out of the window, (Fig.11), (Fig.12). This particular piece is about five and one-half feet tall, and I discovered something in the process of this. Even though I was casting at the California Institute of Technology under ideal conditions, one of the pieces had a severe fracture about one and one-half feet up through the base, so I carved it out into a concave shape that can be seen only from straight on, and repoured to get an inner shape. You cannot repour polyester resin and achieve a really invisible patch. So if you are to repour anything, you have to solve the problem in a way that you know that it is going to be seen, and if it is going to be seen, it is part of the piece.

AUDIENCE: Do you have to do a lot of sanding?

BASSLER: Yes, the whole external aspect was ground like you saw me working on that smaller piece with my grinder, then by hand all the way, buffing the whole thing out; it is a lot of work. I start with a disc grinder with a 24 grit or so, progress to 80 grit, and then by hand with 120 wet and dry, all the way to 600. So, 120, 220, 300, 400, 600, and then you start buffing.

AUDIENCE: You use water?

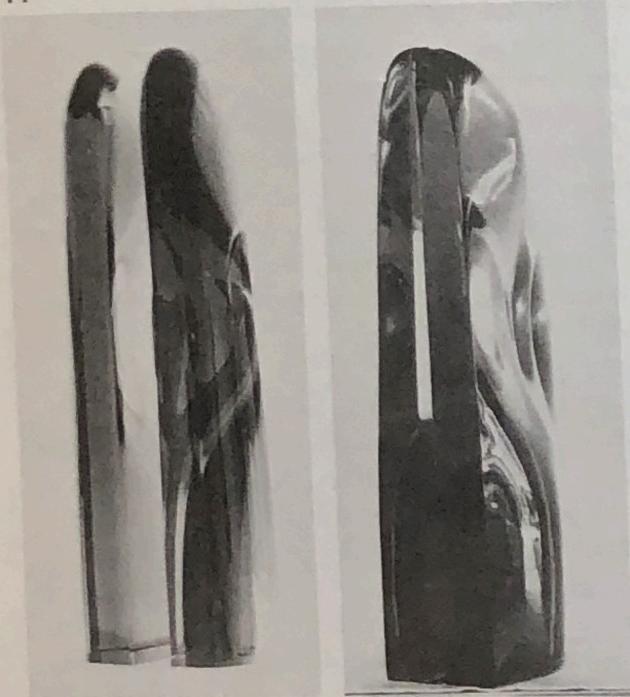
BASSLER: Yes, definitely. It lubricates and really assists the cut. Actually you can use water with an orbital sander too, using the same wet or dry paper.

AUDIENCE: How about the original cast surface?

BASSLER: You mean the gummy surface on the outside of the original casting? Grind it off with a sander. That is one reason why my

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forms are relatively simple. If you attempt anything that is a highly detailed or complex surface, you are out of luck, because you inevitably have to go back into it with a heavy grit grinder or by hand.

AUDIENCE: Is it possible to have a hard surface originally?

BASSLER: Relatively so, yes. If the resin is catalyzed properly to get enough heat out to the surface and your formula is correct, and several other variables, you will come up with a hard surface.

When I returned from the European exhibition tour, I had strong doubts, and thought that I was not going to work in resin anymore. But I got back into it attempting to design lenses, that would project prismatic light and would also work as sculpture. I became involved with these prismatically-edged lenses that I could shoot light through and come up with colored imagery. These pieces need some imagery to relate to if you are going to perceive them as an object. Otherwise it is like looking through a clear piece of glass and all you see is a slight definition of the external ring with no awareness of the modulations. I played around with different shapes and different degrees of prismatic edging and so on and then started letting the sun come through and projecting various light conformations through them. They are relatively small experiments, no more than six or eight inches thick. I was experimenting with shapes that would not modulate light, while these are photographed as if they are sculptures, so to speak. I do not think of them quite in that way. They are more like lens experiments that will provide me with color projections.

This is actually something I would like to do as a large sculpture if the material is ever again available. A poured piece which is a triple lens becoming deeper toward the center. This one is only a couple of feet high; I had to bring it up to polish several times and then regrind it in order to determine the precise depth I was cutting, for you cannot see what you have until you buff it out to a completely polished surface.

This detail of the piece shows an internal spectrum coming off the door to the left of the studio. It was this kind of phenomenon that I used for the film that you are going to see. The film is simply colored phenomena organized into a cohesive statement of abstract color environments. None of them are external projections; they are all internal color happenings. I shot a large number of slides before I determined that I had to do a film. If you move a fraction of an inch the image you see there changes. It is fascinating, and there was no way to do it but to get it on film.

These slides are looking into the interiors of those pieces, and half of the time these were not controlled; they were just pieces around the studio, and I would flash on something that was happening at a certain time of day, or, given a certain light situation, I would whip out the camera and take a picture of it and try to make some mental notes as to what those conditions were, and how I might ultimately control the light. Most of these are in natural light, usually a window source that was hitting the piece. I am showing these horizontally although the sculptures themselves are vertical. The film is also horizontal primarily because I wanted to create a sense of an environment we are accustomed to relating to, which is basically a horizontal perceptual field. So they turn into varied sorts, of apparently extraterrestrial environments, but it is always contained within the relatively confined area of the transparent sculptures. The film manipulates these

light shapes and they move and undulate back and forth.

This is one of the large prisms, really just a demonstration shot. It appears to be out of focus; it is not out of focus if you look at the edge of the sculpture. You cannot focus on the light because the light takes on a certain space as you move and look at it; you think it is in focus but if you try to take a photograph of this light there is no point upon which to focus. What is happening here is that it is in the window with the western afternoon sun coming through the piece and projecting on the wall. This is just a sample because I have had large areas of light projecting off these pieces while at the same time the internal prismatic phenomenon was happening. I have yet actually to design an environment exclusively for these projections because I do not feel quite ready at this point; I do not feel I have control of the medium of light. What I really would like to do eventually is be able to design some kind of projection device that would modulate and control the light, so that I could perhaps in a three-dimensional way, like in a hologram, have a sculptural environment that is three-dimensional, that you can walk into, composed of nothing but light, light projections existing three-dimensionally in space.

These are more apparently out-of-focus projections but that is what they really look like. They are actually notes, observations on conformations that I am able to achieve off these particular shapes or conglomerative shapes that will do this, this whole light trip in various ways.

They have an odd quality of being in motion, which they are not, because of the refractive quality of the pieces that are being projected through, they contain residual light patterns that give that illusion.

You can see how this sort of thing could become a three-dimensional projection in space if the technology existed to realize it. Even in the realm of holograms right now the technology is insufficient to create a life-sized environment that you could actually walk into that would suspend this phenomenon in space.

The film "Variations" takes about fifteen minutes and if you are sufficiently relaxed, that is fine; you can get into it and perceive it as either apparently slow or interpret it as an acceleration of nebular or galactic sorts of activity which is essentially what I have in mind. In any case it is a composition, the sort of experimental shot that you see now. I took a lot of footage and spent a lot of time editing the film into a light composition that has cohesive, overall qualities to it.

A few technical notes on the film for those of you who are interested: I shot it completely with natural light, completely blocking out all light sources in my studio except for one window which was about one-foot wide and four-feet high. Then I simply let that one source of daylight effect various pieces of transparent sculpture. I used a turntable that could be manipulated with a variac rotating it one way or the other. I cued in the image, according to visual phenomena I could see through the camera. As the sculpture moved, a particular image would visually change and open up, and if I reversed it, the same image would close down and disappear so I had control of it. The film is all actual time; I mean what you see was shot at 24 frames per second and the movement controlled by the speed I was moving the object. So there was no manipulation, just straight filming, at least what the camera could see.

AUDIENCE: Were any dissolves used?

BASSLER: Oh yes, dissolves were used in editing. I did not have a camera that was capable of dissolving. I took a lot more footage than shown, edited it in and then dissolved it. I had the assistance of a professional editor, who donated his time because he was interested in my project. He was working for an outfit with a bunch of equipment, useful in the off-hours between twelve o'clock and eight o'clock in the morning when we did our editing. It was nice to have someone who really knew what he was about.

AUDIENCE: Did you use tungsten film?

BASSLER: I did not. If I had, it would not have had that predominantly reddish color; I did not know about the filter factor yet. I used regular Ectachrome High Speed and pushed it to 400. That is why it is grainy, because so little light was coming in. I was not even sure I was going to get anything; it worked all right for the purpose.

AUDIENCE: Can you get prismatic projections from a piece that is cast in glass right out of the mold or do you have to polish the surface in some way to get projection?

BASSLER: No, you have to polish it, so the light transmission would be complete, otherwise it would be softened and disbursed by the translucency of the surface.

AUDIENCE: What did you make your original sculpture of?

BASSLER: Out of plaster. I make a plaster shape and make a mold of that and pour into it.

AUDIENCE: The original castings were probably sculptured so... (inaudible).

BASSLER: Some of the earlier ones, those "Anatomies" forms, were all pretty well modeled originally. I tried to make super perfect sculptures, coating them with resin, polishing before making the mold, so that maybe I would be able to get a perfect casting. No way. It shrinks so much and there is so much surface articulation you have to go back into it and resand the whole thing. So that was a waste of time.

AUDIENCE: Carving is the only way to go about it?

BASSLER: Yes, it is really the safest way to go about it, cast a fairly simple shape with very few heavy changes. If you want to carve into it later, that is fine, but if you have two large areas, one big and one small, with something between like a neck, for example, it would crack right across the neck because it is the weak spot. So you cast yourself a block if you want to make a head and you cut into it.

AUDIENCE: Do you know now if you will succeed in your light environment ideas?

BASSLER: No. All I do know is that it is an idea, a concept maybe ten years away. I do not know if you are familiar with the work of Bruce Beasley, but Bruce had a concept, an idea that he wanted to make great big acrylic sculptures and went to Dupont and all the big outfits, but they said, "No, wait, man, we can only make them this big," so he said, "Well, I'm going to try anyway, and he succeeded. Sometimes not knowing is better than knowing what is to be known."

AUDIENCE: How can you relieve the internal stresses in the cast resin?

BASSLER: You can anneal it in an oven at say 150° for 12 hours or so, and relieve the stresses. Otherwise if they are not severe, they will finally neutralize themselves; very often you will see strange linear shapes coming out to the surf-

ace and you have to keep sanding them back. Eventually, maybe in years, the molecules will settle and stabilize.

AUDIENCE: Are the stresses otherwise harmful to the sculpture?

BASSLER: Well, some could destroy it, especially if there is any kind of lens-like action going on, a magnifying glass syndrome with some converging light patterns and a hot spot. It never actually happened to me, although I have been afraid that it might. Also, I have heard of, but never had it happen, a piece exploding after having been cast for, say, a week to a month. Stresses build up in it and it is just sitting quietly when all of a sudden, blam! It just goes.

AUDIENCE: Does annealing serve any other purpose?

BASSLER: Annealing helps what they call molecular creep; it stabilizes the molecules and settles them into a specific pattern, otherwise they do have a tendency to keep moving around, which might result in distortions of the cast shape.

AUDIENCE: What resin mixtures do you recommend?

BASSLER: I cannot say because the formula I was using when making the large pieces (and I am not casting large pieces anymore and I do not intend to) was based essentially on PPG's mass casting resin modified with either Sylmar Reichhold or a similar product because of the workability and colorations I liked with that combination. I think that this is basically Dewain Valentine's mixture also. But those formulas do not exist anymore, and I am not into the technology sufficiently any longer. I know the PPG still have a mass casting resin. They have changed the formula and the price several times in the last few months, so I cannot give you any specific data. It is a completely different product, different color, and twice as much in cost. It is now \$255 a drum whereas it used to be \$130.

AUDIENCE: You did say you never used coloring agents?

BASSLER: I do use coloring agents but only to modify or neutralize the color that is inherent in the material; for example, PPG used to have a kind of purple-bluish-violet sort of color especially if it accumulated in a heavy mass. I used to modify that with blue to offset the red, so it turns up sort of watery bluish-greenish color, rather than a red.

AUDIENCE: What about acrylic as a casting medium?

BASSLER: I have never poured acrylic. I do not have an autoclave; you know you need an autoclave, an oven, which can provide at least half atmosphere.

AUDIENCE: Do you use some sort of annealing for your polyester?

BASSLER: No, I do not, just a long, slow-curing process.

AUDIENCE: Do you have more ideas for the polyester?

BASSLER: I am hoping to retire from it completely. I am working on things other than these light environments.

AUDIENCE: Why are you writing it off?

BASSLER: I dislike the medium; I really do. I like the results, but I hate working in it. It is just terrible stuff, sticky, smelly, poisonous. Ideally I would prefer to enjoy a process. For a while it was really very challenging; it was a whole new adventure especially with a Cal Tech laboratory to work in.

AUDIENCE: Where are you teaching?

BASSLER: I am teaching at California State University, Northridge.

AUDIENCE: Is there a summer sculpture program in plastics?

BASSLER: There is a summer workshop but not a regular summer program. Too expensive, and we do not have a specific plastics program; we have an open-ended

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sculpture program that deals a lot with plastics for those who want to work in plastics, casting, etc., but we do not have a specific course in any technology. We have all the equipment; we try to accommodate any kind of technological needs that a student may have but no courses like in bronze casting, figure modelling, stone carving, welding, etc., although we do all those things. The program operates on a concept orientation as a base.

AUDIENCE: What precautions do you advise in casting procedures in order to have clean castings?

BASSLER: Well, probably being careful with the environment that you cast in and using a very fine mesh stainless steel filter does take care of almost everything unless you have dust particles in the mold itself before you pour. After you have the mold waxed and prepared, go over it with a tack rag, one of those sticky cheese cloths that car painters use to go over the surface just prior to spraying. It picks up just about everything. You just have to be very careful.

AUDIENCE: Do you recommend an exhaust system?

BASSLER: Absolutely. The best setup even in a small room is to have a filter. You can get furnace filters at any big hardware store. Set these cardboard refills into a doorpanel and have an exhaust fan at the other end of the room draw fresh air through and exhaust the fumes as you are casting. And it is also best to wear a mask at the same time, because it is when the casting is in the process of catalyzation that the highest degree of styrene fumes is given off. Styrene is the stuff that really gets to you. An organic vapor filter mask is your best protection, unless you have a mask with an oxygen supply.

AUDIENCE: In the piece where you had a crack that you ground out, had you polished that surface?

BASSLER: No, I did not. I initially made the same assumption that in order to get the best transparency with a repour, you have to polish it. I take it to about 400 grit with the wet and dry paper, and then when you pour into it, or coat it or whatever, it has teeth so that the new material will bite. Otherwise if you polish it, it separates and then you have to grind it out again. So take it up to 400 where it will go transparent the minute the liquid hits the 400 etch. Even with the smallest cracks, do not bother to polish it because it does not leave anything for the next pour to bond to or if you are doing a series of inbedments, or say, a smaller casting inside a larger casting.

AUDIENCE: How do you avoid casting bubbles?

BASSLER: That is another problem. You want some magic secret to get rid of the air bubbles? Try a welding rod; if you can see the bubble, you can get down in there and kind of prod it along to get it out before it gels.

AUDIENCE: How about vibration?

BASSLER: That does help to a point, but you do not want to vibrate the resin too violently for any period of time because it will upset the catalytic action and possibly create stresses, especially if you have two volumes going, one liquid and one solid. But a vibrator might help. The best thing to do is to try to pour as bubble-less as possible. If you have a suspended form the biggest problem is that bubbles get trapped on the bottom of the form. Sometimes even a vibrator will not take care of it. One solution is to allow the bubbles to rise so there is nothing beneath the form before you drop it in.

AUDIENCE: Lowering the viscosity helps, doesn't it?

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BASSLER: True, except some of the formulas they are coming up with lately have greater viscosity because they have more flexible resin. Then the small bubbles tend not to want to come out under any conditions even on a twelve-hour gel and also their gel molecules are changing; they are not using the same components of compounds at all. I guess they are just trying to keep a product going with whatever happens to be available because of shortages. So you just do not know what you have.

AUDIENCE: How have the formulas changed?

BASSLER: I cannot tell you specifically. All I know is they are not using as much cobalt now; they are using magnesium or lead or some elements which are probably more readily available. The cure pattern of PPG, which is the only one that I know that is available, even after it has completed its peak exotherm and has started to shrink, the outside is still liquid, not just sticky, but liquid. We used to try to pop the mold when it was hot so that it would relieve stress; if you try to do that now, you just have streams of liquid resin pouring off even though the core is completely gelled and shrinking. So you leave it in the mold once you learn the hard way.

AUDIENCE: What proportion of catalyst do you use?

BASSLER: That depends on the volume you are casting, basically. Again, products have been changing. For awhile we were using for relatively small castings about 20 milligrams per gallon. Or in terms of drops, I would say to be on the safe side, about two drops per ounce up to about eight to ten inches thick. That would be a fairly slow, about eight to twelve hours, cure.

AUDIENCE: That is a perfectly clear resin?

BASSLER: No. Pinkish, or bluish, or yellowish or whatever it happens to be. I add a drop of pigment depending on what that color is. It curiously does seem to clear it.

AUDIENCE: Black?

BASSLER: Well, black raises of course...like if it is on the bluish-red side I have been adding a green which augments the red so that you come up with something that appears to be a little closer to my idea of water and air. It appears to be more transparent; it seems to allow the light to come through. The PPG mass casting resin was called amber pink and we could fool around with blues and purples to alter that to something that is reasonably natural-looking and works. But there again you have to be very careful as you accumulate pigment. One drop per gallon can do the trick.

AUDIENCE: What sorts of shapes will cause cracking?

BASSLER: Any kind of sharp change in the convolution of the composition will set up a stress, and it goes.

AUDIENCE: In what form can you buy the resin?

BASSLER: It is available in one gallon containers. I imagine the one gallon containers, since the price of the basic resin has gone up, cost probably \$15 - \$17 a gallon, whereas it used to be \$3 - \$5. I have talked to some people in various locations in the state who have been ordering through Hasting Plastics in Los Angeles, but the best thing to do is to contact the PPG representative directly. I do not know of any other company at this moment producing a resin that is capable of doing anything over a few inches. Since it is a low priority item in the plastics industry they have discontinued this in favor of doing things that are for industry, such as fibreglass construction. There was a time when we had to wait six months

for a drum delivery.

If there are any more technical questions, you can approach me anytime. It is very difficult to give you specific information about the kind of technology I developed a couple of years ago which was for the larger castings, since those products are no longer available in the same formulations. However, I can certainly help you with basic kinds of procedural help. Thank you.